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(54) IMAGE PROCESSOR AND PROCESSING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To realize a color matching process easily and accurately by providing means for generating a plurality of pattern images, means for outputting a plurality of images while arranging in a specified direction, or the like, thereby generating a patch pattern corresponding to a variety of patterns automatically.

SOLUTION: A pallet pattern is printed prior to printing a print pattern for main production. A unit pattern reduced according to reduction parameters received from an external unit 301, e.g. a display/operating section 301 or a host computer, is printed repeatedly lengthwise and crosswise according to pattern arrangement parameters received simultaneously with the reduction parameters. In this regard, a pallet memory is switched simultaneously in order to form a patch pattern for color matching process having a pattern structure. According to the arrangement, an optimal pallet having color representation most faithful to an original image can be selected with reference to a patch pattern.

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CLAIMS

[Claim(s)]

[Claim 1] The image processing system characterized by to have two or more allotment means assign the color scheme to a color picture, respectively, a unit image creation means create a unit image based on said color picture, a pattern creation means assigns the color scheme to the unit image created by said unit image creation means with two or more of said allotment means, respectively, and create two or more pattern images, and an output means arrange and output two or more of said pattern images in the predetermined direction.

[Claim 2] Said unit image creation means is an image processing system according to claim 1 characterized by creating a unit image by reducing the predetermined range of said color picture.

[Claim 3] Said unit image creation means is an image processing system according to claim 1 characterized by creating a unit image by extracting the predetermined range of said color picture.

[Claim 4] Furthermore, it is the image processing system according to claim 1 to 3 which has a directions input means to perform the directions input to equipment, and is characterized by said unit image creation means creating said

unit image according to the directions input inputted from said directions input means.

[Claim 5] Said output means is an image processing system according to claim 4 characterized by arranging and outputting said two or more pattern images according to the pattern arrangement directions inputted from said directions input means.

[Claim 6] Said directions input means is an image processing system according to claim 4 or 5 characterized by performing the input from an external instrument.

[Claim 7] Said output means is an image processing system according to claim 1 to 6 characterized by having the recording head which consists of two or more unit record components.

[Claim 8] Said recording head is an image processing system according to claim 7 characterized by being the ink jet recording head which records by breathing out ink.

[Claim 9] Said recording head is an image processing system according to claim 8 which is the recording head which carries out the regurgitation of the ink using heat energy, and is characterized by having the heat energy conversion object for generating the heat energy given to ink.

[Claim 10] The unit image creation process which is the image-processing approach in the image processing system which has two or more color palettes

which assign the color scheme to a color picture, and creates a unit image based on said color picture, The pattern creation process which assigns the color scheme to the unit image created in said unit image creation process with said two or more color palettes, respectively, and creates two or more pattern images, The image-processing approach characterized by having the output process which arranges and outputs said two or more pattern images in the predetermined direction.

[Claim 11] It is the computer-readable memory in which the program code of the image processing in the image processing system which has two or more color palettes which assign the color scheme to a color picture was stored. The code of the unit image creation process which creates a unit image based on said color picture, The code of the pattern creation process which assigns the color scheme to the unit image created in said unit image creation process with said two or more color palettes, respectively, and creates two or more pattern images, Computer-readable memory characterized by having the code of the output process which arranges and outputs said two or more pattern images in the predetermined direction.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image processing system which breathes out a liquid ink drop and forms a color picture, and its approach, concerning an image processing system and its approach.

[0002]

[Description of the Prior Art] The ink jet printing equipment using the recording head equipped with two or more ink deliveries which carry out the regurgitation from the nozzle of a recording head to a record medium by making ink into a drop as an example of a printing equipment which performs printing record to a record medium conventionally using the recording head equipped with two or more record components is known. Especially, if it applies as textile-printing equipment which forms a pattern on printing by operating relatively [textile / which is a record medium] said recording head with the nozzle train of predetermined width of face sequentially on a shaft in every direction about this ink jet printing equipment, compared with conventional-type screen printing, the advantageous thing attracts attention in respect of that equipment configuration and a running cost.

[0003] However, in order for the combination of the very small ink droplet represented with such a printing equipment by yellow, a Magenta, cyanogen, etc. and the so-called process color to determine a color scheme, it is desirable to carry out the so-called color matching process of extracting the patch which arranged the color pattern and performing a double lump of coloring before this production print so that the meant color scheme may be reproduced to a printed product.

[0004] There are few processes which intervene by formation of an image compared with conventional-type screen printing in order to obtain a print image by injecting an ink droplet directly into a print medium with the textile-printing equipment which was mentioned above, and to which the ink jet printing equipment was applied like, and there is the big description of the meant image being stabilized and being obtained. Moreover, the ink jet technique has reached the skill level for which offset printing is pressed in the image expression capacity by image processings technique, such as an error diffusion method, and the ink jet record technique in the gradation power of expression by combining a multiple-value printing technique with this, and the large color limits range by the conventional 6 - 10 color printing of 4 or more primary colors.

[0005]

[Problem(s) to be Solved by the Invention] However, if it is going to reproduce

the textile product printed with the custom-made color color which is used with conventional-type screen printing, and which exists innumerably with the process color by the combination of the very small ink droplet breathed out from the regurgitation nozzle of the ink jet head of four to 8 color, the difference of the tint by the granular feeling resulting from arrangement of the ink droplet by the above-mentioned error diffusion method and the superposition sequence of ink will occur. For this reason, the color matching process of determining the optimal pallet data is newly needed as an unescapable process of ink jet textile printing, comparing with a tint to print and mean two or more patches which arranged the color pattern on beforehand based on two or more color palettes.

[0006] furthermore, even if the optimum value of the pallet data of each color scheme which constitutes a pattern is acquired, in order for the granular error by the above-mentioned error diffusion method to surface depending on the structure of a pattern and to cause a modulation in the tint of the whole pattern, reappearance of a pattern is made more into difficulty.

[0007] This invention is made in view of the above-mentioned technical problem, and the purpose realizes a color matching process easily and correctly by carrying out automatic generating of the patch pattern corresponding to various patterns, and is to offer the suitable image processing system and its approach as an industrial ink jet printing machine, an industrial ink jet printing machine, etc.

[0008]

[Means for Solving the Problem] The image processing system of this invention is equipped with the following configurations as a way stage for attaining the above-mentioned purpose.

[0009] That is, it is characterized by to have two or more allotment means assign the color scheme to a color picture, respectively, a unit image creation means create a unit image based on said color picture, a pattern creation means assigns the color scheme to the unit image created by said unit image creation means with two or more of said allotment means, respectively, and create two or more pattern images, and an output means arrange and output two or more of said pattern images in the predetermined direction.

[0010] For example, said unit image creation means is characterized by creating a unit image by reducing the predetermined range of said color picture.

[0011] For example, said unit image creation means is characterized by creating a unit image by extracting the predetermined range of said color picture.

[0012] Furthermore, it has a directions input means to perform the directions input to equipment, and said unit image creation means is characterized by creating said unit image according to the directions input inputted from said directions input means.

[0013] For example, said output means is characterized by arranging and

outputting said two or more pattern images according to the pattern arrangement directions inputted from said directions input means.

[0014] For example, said directions input means is characterized by performing the input from an external instrument.

[0015] For example, said output means is characterized by having the recording head which consists of two or more unit record components.

[0016] For example, said recording head is characterized by being the ink jet recording head which records by breathing out ink.

[0017] For example, said recording head is a recording head which carries out the regurgitation of the ink using heat energy, and is characterized by having the heat energy conversion object for generating the heat energy given to ink.

[0018]

[Embodiment of the Invention] Hereafter, 1 operation gestalt which starts this invention with reference to a drawing is explained to a detail.

[0019] The <1st operation gestalt> book operation gestalt shows the example which applied the image processing system of this invention to the printing machine of an ink jet method, and drawing 1 is the side elevation showing the outline block diagram of the ink jet textile-printing equipment (the following, printing equipment).

[0020] The conveyance section in which 100 conveys a record medium 101 in

drawing 1 , the printer unit on which 102 records, The delivery unit which stocks the record medium 101 with which 103 was printed, 104 begins to roll and roll a record medium 101. A roller and 105,106 A presser-foot roller, The platen section at which 107 maintains a driving roller at and 108,109 maintains the surface smoothness of the print section, It is the stanchion which the cut section from which a presser-foot roller and 111 cut a driving roller, and, as for 112, 110 cuts a record medium 101, and 113 put the carriage unit 116 on the presser-foot roller of the cut section 112, puts 114 upwards, and is supported. The conveyance motor 115 of a driving roller 107,111 is a driving source. The carriage unit 116 moves horizontally by the carriage motor 117 in a stanchion 114 top. And the print of a up to [a record medium 101] is performed by the before [the before side head unit 118] side recording head group 119, and the back side recording head group 121 of the back side head unit 120.

[0021] The relation between the feed direction of a record medium 101 and the scanning direction of a recording head (118,120) is shown in drawing 2 . In this drawing, make into the direction of vertical scanning the direction Y (the conveyance direction Y) to which a record medium 101 is sent, and let the direction X (the scanning direction X) to which the carriage unit 116 is sent be a main scanning direction. It is separated from the recording head group 119 of the before side head unit 118, and the recording head group 121 of the back

side head unit 120 by the gap D between units. In addition, it is expressed that the gap D between this unit sets 1 bandwidth of each recording head, i.e., 1 time of the recording width of a recording head, to H as follows.

[0022]

$$D=(2n+1) \times H/2 \text{ (n is an integer)}$$

Moreover, spacing of head gap d minutes is between each recording head.

[0023] Next, the block diagram showing the main configuration section in the printing equipment of this operation gestalt is shown and explained to drawing 3.

[0024] In drawing 3, 301 is external instruments, such as a host computer, and is outputting image data, various commands, and a parameter to the printing equipment 302 of this operation gestalt.

[0025] The interface section 303 in which the main configurations of this printing equipment 302 perform communications controls, such as image data with an external instrument 301 and a command, and a parameter, The control section 304 which analyzes the image data received from the external instrument 301 and a command, a parameter, etc., and controls the printing equipment 302 whole, A display / control unit 305 equipped with the display which consisted of LCD etc. in order to perform an interface with an operator, and the control unit which consisted of key switches etc., The image-processing section 306 changed into the image data which stored image data and was doubled with the

property of a printing equipment 302, The side recording head group 119 before carrying out the regurgitation of various kinds of ink for record in the before side head unit 118, The side head mechanical component 308 before driving each recording head of the before side recording head group 119 according to a picture signal, The back side head mechanical component 310 which drives each recording head of the back side recording head group 121 which carries out the regurgitation of various kinds of ink for record in the back side head unit 120 according to a picture signal, The carriage motor mechanical component 311 which performs drive control of the carriage motor 117 which is a driving source for the carriage unit 116 which carried the before side head unit 118 and the back side head unit 120 to move, It consists of the conveyance motorised section 312 which performs drive control of the conveyance motor 115 which is a driving source for moving a record medium 101, and the conveyance motor 115.

[0026] Drawing 4 is the block diagram showing the main configuration section of the above-mentioned image-processing section 306. In drawing 4 , the image memory section in which 401 performs storing and the output of image data, and 402 receive the input brightness data R, G, and B or the input code data P. Brightness / concentration conversion, masking processing, and lower color removal (UCR) and black generation, Perform the special-feature generation etc. and the multiple value / binary transducer which makes these multiple-values

image data binary, and 403 receive the binary image data C1-C8 from a multiple value / binary transducer 402, or the binary image data B1-B8 from the image memory section 401. The sequential multi-scan section which distributes F1-F8, and the image data that becomes R1-R8, respectively to the before side head unit 118 and the back side head unit 120 (following SMS section), The register controller which 404 carries out the temporary storage of the image data by which SMS processing was carried out [above-mentioned], and performs register adjustment of a main scanning direction X and the direction Y of vertical scanning to real print timing, and 405 are the image data FC1-FC8 by which register adjustment was carried out, and the output-control section which assigns RC1-RC8 to each recording head.

[0027] Drawing 5 is the block diagram showing the main configuration section of the above-mentioned image memory section 401. The image memory section 401 consists of the CPU interface section 501 which performs the communication link with the control section 304 containing CPU (central processing unit) which controls the printing equipment 302 whole, the Direct-Memory-Access section (following DMA section) 502 which receives the image data sent from the host computer 301, the real storage section 503 which stores image data, an image data bus control section 504 which controls the direction of an image data bus, and a memory address control section 505 which

performs addressing of the real storage section 503.

[0028] Especially, in the memory address control section 505, at the time of image data read-out in the case of a print, the increment of the address can be made adjustable and it has expansion/contraction processing section 506 which realizes expansion and contraction of a print image. Furthermore, it has the pallet counter 507 for opting for arrangement of the pallet pattern in this invention, the read-out starting address location (X, Y) register 508 of the real storage section 503, and the direction read-out termination location register 509 of X and the direction read-out termination location register 510 of Y, and a pallet selection signal (PSEL) is further sent out to a multiple value / binary transducer 402 according to the pallet change timing by the pallet counter 507.

[0029] Drawing 6 is the block diagram showing the main configuration section of a multiple value / binary transducer 402. As for the brightness / concentration transducer to which 601 performs brightness / concentration conversion to the input brightness data R, G, and B or the input code data P, the masking processing section in which 602 performs lower color removal (UCR), black component generation, and the special-feature generation, the pallet transducer from which 603 changes into the ink color data P1-P8 the input data (PLT) which is code data with reference to the pallet memory 604, and 605, a gamma property transducer and 606 are the head concentration amendment sections.

Especially in this operation gestalt, the pallet used at the time of a pallet pattern print can be switched at any time by having two or more pallet memory 604 according to the above-mentioned pallet selection signal (PSEL).

[0030] The example of a pallet pattern print which reduced image data to drawing 7 in this operation gestalt is shown.

[0031] In advance of the print of the print pattern 701 for this production, the example which prints the pallet pattern shown in 702 is explained. The unit pallet pattern 703 reduced according to the contraction parameter inputted from the external instruments 301, such as a display / control unit 305, or a host computer, is repeatedly printed according to the pattern arrangement parameter into which it was inputted by a contraction parameter and coincidence in all directions. The patch pattern equipped with the structure of a pattern for color matching processes is formed by switching the above-mentioned pallet memory 604 to coincidence in that case.

[0032] Therefore, with reference to this patch pattern, the optimal pallet judged that the color reproduction most faithful to a subject-copy image is made can be chosen.

[0033] The 2nd operation gestalt concerning this invention is explained below the <2nd operation gestalt>. In addition, since the equipment configuration in the 2nd operation gestalt is the same as that of the 1st operation gestalt mentioned

above, explanation is omitted.

[0034] In the 1st operation gestalt, although the example which performs the pallet pattern print which reduced image data was explained, in the 2nd operation gestalt, the example which performs the pallet pattern print which cuts off a part of image data is shown.

[0035] With reference to drawing 8 , the example which prints the pallet pattern shown in 802 is explained in advance of the print of the print pattern 801 for this production. The unit pallet pattern 803 by which range assignment was carried out according to the range parameter inputted from the external instruments 301, such as a display / control unit 305, or a host computer, is repeatedly printed according to the pattern arrangement parameter into which it was inputted by a range parameter and coincidence in all directions. The above-mentioned pallet memory 604 also forms the patch pattern for color matching processes which received the completely same error diffusion process as this production print pattern by switching to coincidence in that case.

[0036] Therefore, even when the error diffusion method which is easy to be influenced especially by the pattern is applied, with reference to this patch pattern, the optimal pallet judged that the color reproduction most faithful to a subject-copy image is made can be chosen.

[0037] In carrying out <other operation gestalt> this invention, although an ink jet

recording method is adopted, it has a means to generate heat energy as energy used especially in order to carry out the regurgitation of the ink, and the effectiveness which was excellent in the print head of a method which makes the state transformation of ink occur with heat energy, and the printing equipment is brought about. As a means to generate heat energy, for example, an electric thermal-conversion object, a laser beam, etc. are mentioned. By adopting this method, densification and highly minute-ization can be attained further.

[0038] Moreover, this invention is especially carried out suitably in the ink jet recording apparatus, for example, the ink jet textile-printing equipment, of industrial use, although it is broadly applicable to various ink jet recording apparatus. According to this invention, the improvement in image quality of ink jet textile-printing equipment and a productivity drive are attained.

[0039] Next, the whole process of the ink jet textile-printing record carried out with the application of this invention is explained. A textile is dried after passing through an ink jet textile-printing process using an above-mentioned ink jet recording apparatus (an air drying is included). And the process which diffuses the color on **** fiber succeedingly, and carries out reaction fixing of the color to fiber is given. According to this process, sufficient color enhancement and the robustness by fixing of a color can be acquired.

[0040] This diffusion and a reaction fixing process are conventionally good by

the well-known approach, for example, the steaming method is mentioned. In addition, alkali treatment may be beforehand performed to a textile in front of a textile-printing process in this case.

[0041] Then, in a tail end process, removal of the matter which used the unreacted color for removal and pretreatment is performed. Finally, record is completed through arrangement finishing processes, such as defective amendment and iron finishing.

[0042] Especially as a textile for ink jet textile printing, engine performance, such as that sufficient concentration may be made to color (1) ink, that the percentage exhaustion of (2) ink is high, that (3) ink dries promptly on a textile, that there is little generating of a blot of the irregular ink on (4) textiles, and excelling in the conveyance nature on (5) equipment, is required. In order to satisfy these military requirements, in this invention, it can pretreat beforehand to a textile if needed. For example, the proposal of the textile which the textiles which have an ink absorbing layer in JP,62-53492,A are indicated [textile], and made the reduction inhibitor and the alkaline substance contain in JP,3-46589,B is made. The processing which makes the matter chosen as a textile from an alkaline substance, a water soluble polymer, synthetic macromolecule, a water-soluble metal salt, a urea, and thiourea contain as an example of such pretreatment can be mentioned.

[0043] As an alkaline substance, amines, such as hydroxylation alkali metal, such as a sodium hydroxide and a potassium hydroxide, monochrome, JI, and triethanolamine, a sodium carbonate, a potassium carbonate GCC acid, or a GCC acid alkali-metal salt is mentioned, for example.

[0044] Furthermore, there are organic-acid metal salts, ammonia, ammonium compounds, such as calcium acetate and barium acetate, etc. Moreover, the sodium trichloroacetate which serves as alkali matter under steaming and dry heat can be used. As a desirable alkaline substance, there are the sodium carbonate and sodium bicarbonate which are used for dyeing of reactive dye especially.

[0045] As a water soluble polymer, quality of the protein matter, such as polysaccharide, such as cellulose system matter, such as starch matter, such as corn and wheat, a carboxymethyl cellulose, methyl cellulose, and hydroxyethyl cellulose, sodium alginate, gum arabic, low KASUITO peen gum, tragacanth gum, KUAGAMU, and a tamarind seed, gelatin, and casein, a tannin oxide system compound, an acrylic-acid system water soluble polymer, a maleic-anhydride system water soluble polymer, etc. are mentioned. A polysaccharide system macromolecule and a cellulose system macromolecule are desirable also in these.

[0046] As a water-soluble metal salt, for example like the halogenide of alkali

metal and alkaline earth metal, typical ionic crystal is made and the compound which is pH 4-10 is mentioned. as the typical example of this compound -- alkali metal -- NaCl and Na₂ -- also while SO₄, KCl, CH₃COONa, etc. are mentioned and CaCl₂ and MgCl₂ grade are mentioned as an alkaline earth metal, the salts of Na, K, and calcium are desirable.

[0047] Although especially the method of making a textile contain the above-mentioned matter etc. in pretreatment is not restricted, it can mention the dip coating usually performed, the pad method, a coating method, a spray method, etc.

[0048] Furthermore, since the textile-printing ink given to the textile for ink jet textile printing has only adhered in the condition of having given on the textile, it is desirable to give the fixing process of the coloring matter in ink, such as a color to fiber, succeedingly. A conventionally well-known approach is sufficient as such a fixing process, for example, when not using the steaming method, the HT steaming method, the thermostat fixing method, and the textile that carried out alkali treatment beforehand, the alkali pad steam method, the alkali PUROTCHI steam method, an alkali shock procedure, the alkali cold fixing method, etc. are mentioned. Moreover, a fixing process has some from which there are a thing including a reaction process and a thing which is not included, fiber is infiltrated as a latter example, and it does not secede physically by the

color. Moreover, if it has necessary coloring matter as ink, a proper thing can be used, and it is not restricted to a color, but a pigment may be included.

[0049] According to a well-known approach, washing can perform conventionally removal of the matter used for removal and pretreatment of a still more nearly unreacted color after the above-mentioned reaction fixing process. In addition, it is desirable to use the conventional fix processing together in the case of this washing.

[0050] The print object with which the tail end process described above was given is separated by desired magnitude after that, a process for the separated piece to obtain final workpieces, such as ** arrival, adhesion, and joining, is given, and clothing and quilt covers, such as a dress, DRESS, a necktie, and a swimming suit, sofa covering, a handkerchief, a curtain, etc. are obtained. The approach of processing a textile by sewing etc. and using as clothing or other daily necessities is a well-known technique.

[0051] In addition, as a medium for a print, the various things which can give a predetermined liquid are mentioned using other tabular object and ink jet techniques, such as a textile, wall cloth, yarn used for embroidery, wallpaper, paper, a transparency sheet, and alumite, and it does not ask that a material, weave, and how to knit are textiles, but all textiles, a nonwoven fabric, and other cloth are included.

[0052] Although not only the ink jet print method mentioned above but various print methods can be used for this invention, when adopting an ink jet print method, it is equipped with a means generate heat energy as energy used also in it in order to make the ink regurgitation perform, and brings about the effectiveness excellent in using the so-called print head of the method which makes the change of state of ink occur with said heat energy, and Bubble Jet, and a printing equipment. It is because the densification of a print and highly minute-ization can be attained according to this method.

[0053] About the typical configuration and typical principle, what is performed using the fundamental principle currently indicated by the U.S. Pat. No. 4723129 specification and the 4740796 specification, for example is desirable. Although this method is applicable to both the so-called mold on demand and a continuous system On the electric thermal-conversion object which is especially arranged corresponding to the sheet and liquid route where the liquid (ink) is held in the case of the mold on demand By impressing at least one driving signal which gives the rapid temperature rise which corresponds to print information, is and exceeds nucleate boiling Since make an electric thermal-conversion object generate heat energy, the heat operating surface of a print head is made to produce film boiling and the air bubbles in the liquid (ink) corresponding to this driving signal can be formed by one to one as a result, it is effective. A liquid (ink)

is made to breathe out through opening for regurgitation by growth of these air bubbles, and contraction, and at least one drop is formed. If this driving signal is made into the shape of a pulse form, since growth contraction of air bubbles will be performed appropriately instantly, the regurgitation of a liquid (ink) excellent in especially responsibility can be attained, and it is more desirable. As a driving signal of the shape of this pulse form, what is indicated by the 4463359th specification of an United States patent and the 4345262 specification is suitable. In addition, if the conditions indicated by the U.S. Pat. No. 4313124 specification of invention about the rate of a temperature rise of the above-mentioned heat operating surface are adopted, the further excellent print can be performed.

[0054] As a configuration of a print head, the configuration using the U.S. Pat. No. 4558333 specification and U.S. Pat. No. 4459600 specification which indicate the configuration arranged to the field to which the heat operation section other than the combination configuration (straight-line ***** or right-angle liquid flow channel) of a delivery which is indicated by each above-mentioned specification, a liquid route, and an electric thermal-conversion object is crooked is also included in this invention. In addition, the effectiveness of this invention is effective also as a configuration based on JP,59-138461,A which indicates the configuration whose puncturing which absorbs the pressure wave of JP,59-123670,A which indicates the configuration which uses a

common slit as the discharge part of an electric thermal-conversion object to two or more electric thermal-conversion objects, or heat energy is made to correspond to a discharge part. Namely, no matter the gestalt of a print head may be what thing, it is because it can print now efficiently certainly according to this invention.

[0055] In addition, the print head of the ability to constitute corresponding to the gestalt of a printing equipment shall be natural, and should just arrange the delivery over the range corresponding to the width of face of a print medium to the so-called thing of a line printer gestalt. Moreover, this invention is effective also when the print head exchangeable chip type to which the electric connection with the body of equipment and supply of the ink from the body of equipment are attained by the print head fixed to the body of equipment or the body of equipment being equipped, or the print head of the cartridge type with which the ink tank was formed in the print head itself in one is used as a print head of a serial type like an upper example.

[0056] Moreover, as a configuration of the printing equipment of this invention, since the effectiveness of this invention can be stabilized further, it is desirable to add the regurgitation recovery means of a print head, a preliminary auxiliary means, etc. If these are mentioned concretely, a call heating means to heat using the capping means, the cleaning means, the pressurization or the suction

means, the electric thermal-conversion object, the heating elements different from this, or such combination over a print head, and a call regurgitation means to perform the regurgitation different from a print can be mentioned.

[0057] Furthermore, in addition, in this invention example explained above, although ink is explained as a liquid It is ink solidified less than [a room temperature or it], and what is softened or liquefied at a room temperature may be used. Or by the ink jet method, since what carries out temperature control is common as a temperature control is performed for ink itself within the limits of 70 or less degrees 30 degrees or more and it is in the stabilization regurgitation range about the viscosity of ink, ink may use what makes the shape of liquid at the time of use print signal grant. In addition, in order to prevent the temperature up by heat energy positively because you make it use it as energy of the change of state from a solid condition to the liquid condition of ink, or in order to prevent evaporation of ink, the ink which solidifies in the state of neglect and is liquefied with heating may be used. Anyway, ink liquefies by grant according to the print signal of heat energy, and this invention can be applied also when using the ink of the property which will not be liquefied without grant of heat energy, such as that by which liquefied ink is breathed out, and a thing which it already begins to solidify when reaching the medium for a print. The ink in such a case is good for a porosity sheet crevice or a through tube which is indicated by JP,54-56847,A

or JP,60-71260,A also as liquefied or a gestalt which counters to an electric thermal-conversion object in the condition of having been held as a solid. In this invention, the most effective thing performs the film-boiling method mentioned above to each ink mentioned above.

[0058] Furthermore, in addition, as a gestalt of this invention, although used as an image-processing terminal of information management systems, such as a computer, the gestalt of the reproducing unit combined with others, a reader, etc. may be taken.

[0059] In addition, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device.

[0060] Moreover, it cannot be overemphasized by the purpose of this invention supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that it is attained.

[0061] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage

which memorized that program code will constitute this invention.

[0062] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0063] Moreover, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that OS (operating system) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but was mentioned above by the processing is realized.

[0064] Furthermore, after the program code read from a storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or a computer is equipped, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped based on directions of the program code is actual, and mentioned above by the processing is realized.

[0065]

[Effect of the Invention] As explained above, according to this invention, the color

pattern near a real image is easily extractable by carrying out automatic generating of the patch pattern corresponding to various patterns in the case of the color matching process in image processing systems, such as an industrial ink jet printing machine and an ink jet printing machine.

[0066] Also in case the printout using the error diffusion method which is especially easy to be influenced by the pattern is performed, more exact color reproduction can be realized.

[0067]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation showing the outline configuration of 1 operation gestalt concerning this invention.

[Drawing 2] It is drawing showing the relation of the feed direction of a record medium and the scanning direction of a recording head in this operation gestalt.

[Drawing 3] It is the block diagram showing the main configuration section of the printing equipment in this operation gestalt.

[Drawing 4] It is the block diagram showing the main configuration section of the

image-processing section in this operation gestalt.

[Drawing 5] It is the block diagram showing the main configuration section of the image memory section in this operation gestalt.

[Drawing 6] It is the block diagram showing the main configuration section of the multiple value / binary transducer in this operation gestalt.

[Drawing 7] It is drawing showing the example of a pallet pattern print which reduces the image data in this operation gestalt.

[Drawing 8] It is drawing showing the example of a pallet pattern print which cuts off a part of image data in the 2nd operation gestalt concerning this invention.

[Description of Notations]

100 Conveyance Section

101 Record Medium

102 Printer Unit

103 Delivery Unit

104 It Begins to Wind and is Roller.

105,106,110,113 Presser-foot roller

107,111 Driving roller

108,109 Platen section

112 Cut Section

114 Stanchion

115 Driving Source

116 Carriage Unit

117 Carriage Motor

118 Before Side Head Unit

119 Before Side Recording Head Group

120 Back Side Head Unit

121 Back Side Recording Head Group

301 External Instruments, Such as Host Computer

302 Printing Equipment

303 Interface Section

304 Control Section

305 Display/Control Unit

306 Image-Processing Section

307 Before Side Recording Head Mechanical Component

308 Back Side Recording Head Mechanical Component

309 Carriage Motor Mechanical Component

310 Conveyance Motorised Section

401 Image Memory Section

402 Multiple Value / Binary Transducer

403 The SMS Section

404 Register Controller

405 Output-Control Section

501 CPU Interface Section

502 The DMA Section

503 Real Storage Section

504 Image Data Bus Control Section

505 Memory Address Control Section

506 Expansion/Contraction Processing Section

507 Pallet Counter

508 Read-out Starting Position Register

509 The Direction Read-out Termination Location Register of X

510 The Direction Read-out Termination Location Register of Y

601 Brightness / Concentration Transducer

602 Masking Processing Section

603 Pallet Transducer

604 Pallet Memory

605 Gamma Property Transducer

606 Head Concentration Amendment Section

607 Output Selection Section